

### **REMARKS**

Thorough examination and careful review of the application by the Examiner is noted and appreciated.

The Examiner has objected to ¶'s 007-0011, 0017, 0018, 0024, 0025, 0031, 0032, 0034, 0035, 0038, 0039, 0040, 0041, 0043, and 0044 of the Specification.

The Examiner has objected to the Abstract of the Disclosure

The Examiner has rejected claims 1-20.

Claims 1-20 have been amended.

Claims 21-23 have been newly added.

Claims 1-23 are pending.

The changes in the Specification, Abstract, and Claims do not introduce new matter but clarify matters shown and described in the application as filed. The foregoing amendments and following remarks are believed to be fully responsive to the Office Action mailed July 29, 2004 and render all currently pending claims at issue patentably distinct over the references cited by the Examiner. The foregoing amendments are taken in the interest of expediting prosecution and there is no intention of surrendering any range of equivalents to which Applicant would otherwise be entitled in view of the prior art. Reconsideration and examination of this application is respectfully requested in light of the foregoing amendments and the following remarks.

### **EXAMINER'S OFFICE ACTION**

In the July 29, 2004 Office Action (hereafter "OA") referenced above, the Examiner made many helpful comments and suggestions regarding Applicant's Application. Applicant appreciates Examiner's thorough review and helpful suggestions regarding Applicant's Application.

In the OA, the Examiner:

objected to ¶'s 007-0011, 0017, 0018, 0024, 0025, 0031, 0032, 0034, 0035, 0038, 0039, 0040, 0041, 0043, and 0044 based on informalities present in each paragraph;

objected to the abstract of the disclosure because of the terminology "to thereby identify and repair defective columns or rows associated with the non-volatile memory, regardless of the corruption of the columns";

rejected claims 2-8, and 11-20 under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention; and

rejected claims 12-22 under 35 USC §103(a) as being unpatentable over Mangan et al, U.S. Patent No. 5,471,478 (hereinafter, MANGAN).

#### **Objections to the Specification and Abstract**

Paragraphs 007-0011, 0017, 0018, 0024, 0025, 0031, 0032, 0034, 0035, 0038, 0039, 0040, 0041, 0043, and 0044 were objected to based on informalities present in each paragraph; and

the Abstract of the disclosure was objected to because of the terminology "to thereby identify and repair defective columns or rows associated with the non-volatile memory, regardless of the corruption of the columns."

Examiner suggested numerous helpful changes to both the Specification and the Abstract of the Disclosure in OA, pages 2-7. The Specification and the Abstract of the disclosure were amended in accordance with Examiner's suggestions.

Thus, the objections to Applicant's Specification and Abstract of the Disclosure have been obviated.

### **Rejections under 35 USC § 112**

Claims 2-8, and 11-20 stand rejected under 35 USC §112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Accordingly, claims 2-8, and 11-20 have been amended in accordance with Examiner's suggestions listed on page 7-13, clause 4.

Thus, the rejections 35 USC §112 have been overcome and the 112 rejection based on indefiniteness should be removed.

### **Rejections under 35 USC § 103(a)**

Claims 1-20 stand rejected under 35 USC §103(a) as being unpatentable over MANGAN and Official Notice.

The rejection of claims 1-20 based on MANGAN and Official Notice is respectfully traversed.

Claims 1-20 are rejected on 35 USC § 103(a) as being unpatentable over MANGAN. Applicant's Attorney traverses the Examiner's rejection.

Claims 1, 7-11, 17-20 were amended to further define the error control coding method of the present invention to have the structure and steps of:

**providing a plurality of columns and rows associated with said non-volatile memory;**

**associating each of said plurality of columns associated with said non-volatile memory with a respective I/O terminal;**

**associating a spare column with at least two of each of said plurality of columns associated with both said non-volatile memory and with associated with a respective I/O terminal.**

Support for amending independent claims 1, 7-11, 17-20 is disclosed in Applicant's Specification as amended, ¶0044.

As is disclosed in amended independent claims 1, 7-11, 17-20, the present invention operates to enhance efficiency of defective row and column repair by **associating a spare column with at least two of each of a plurality of columns associated with both a non-volatile memory and with a respective I/O terminal**. Typically, each spare column is reserved for repairing one column corresponding to a specific I/O terminal. However, the present invention allows a more complicated design to operate efficiently.

Nowhere does MANGAN disclose, teach, or suggest that a spare column be associated with at least two of each of a plurality of columns, wherein the at least two columns are each further associated with both non-volatile memory and with a respective I/O terminal. The MANGAN reference does not disclose, teach, or suggest the features of selectively providing shared spare columns within the non-volatile memory. Thus, the present invention as claimed is not rendered obvious by MANGAN. Therefore, independent claims 1, 7-11, 17-20 are patentably distinct over the MANGAN reference, as are all dependent claims depending therefrom respectively.

With regard to claims depending from independent claim 1, Claims 21-24 were added to further define the features of the error control coding method and system for non-volatile memory of the present invention.

More particularly, Claim 21 is directed to accomplishing the addition of a shared spare column by use of a (16, 11) Hamming code.

Claim 22 was added to further define the link between the non-volatile memory and the non-volatile memory as sharing a circuit periphery. Support for adding claim 22 is disclosed in Applicant's Amended Specification, ¶ 0045.

Claim 23 was added to further define the unconditional enabling of the error correction coding circuit when accessing an information row within the information array in order to make certain that the repairing data will be correctly obtained. Support for adding claim 23 is disclosed in Applicant's Amended Specification, ¶ 0045.

None of the features disclosed in newly added claims 21-23 are suggested or taught in MANGAN or in conventional practice.

The MANGAN reference fails to provide the necessary motivation of one skilled in the art to combine the individual teaching of MANGAN with conventional practice to arrive at the Appellants' invention. The reference, even when combined with conventional practice, fails to yield Appellant's invention.

The reference of record does not teach, suggest or remotely hint alone or in combination the addition of **a spare column associated with at least two of each of a plurality of columns associated with both a non-volatile memory and with a respective I/O terminal** of the present invention. Nor does the MANGAN reference provide use of a Hamming code, as disclosed in Claim 21; a shared periphery circuit link between an informational array and non-volatile array, as disclosed in Claim 22; or an enabling trigger for obtained data, as disclosed in Claim 23. Therefore, claims 1-23 are patentably distinct from the prior art of record.

The foregoing amendments further clarified some of the features of the error control coding method and system for non-volatile memory. It is believed that the present invention as amended is novel and non-obvious over the references relied upon by the examiner.

Additionally, as discussed previously, because none of the references cited and relied upon by Examiner disclose, teach or suggest all of the features alone or in combination of the claimed invention, the 103 rejections are believed to be obviated.

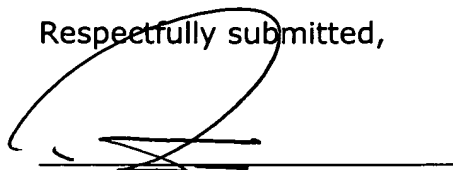
Based on the above, it is respectfully submitted that the amended claims 1-20 and claims depending therefrom, including newly added claims 21-23 are in condition for allowance, which allowance is earnestly solicited.

Based on the foregoing, the Applicant respectfully submits that all of the pending claims are now in condition for allowance. Such favorable action by the Examiner at an early date is respectfully solicited.

If for some reason Applicant has not requested a sufficient extension and/or have not paid a sufficient fee for this response and/or for the extension necessary to prevent the abandonment of this application, please consider this as a request for an extension for the required time period and/or authorization to charge our Deposit Account No. 50-0484 for any fee which may be due.

In the event that the present invention is not in a condition for allowance for any other reasons, the Examiner is respectfully invited to call the Applicant's representative at his Bloomfield Hills, Michigan office at (248) 540-4040 such that necessary action may be taken to place the application in a condition for allowance.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'Randy Tung', is written over a horizontal line. The signature is stylized with a large, sweeping loop at the beginning.

Randy Tung (31,311)